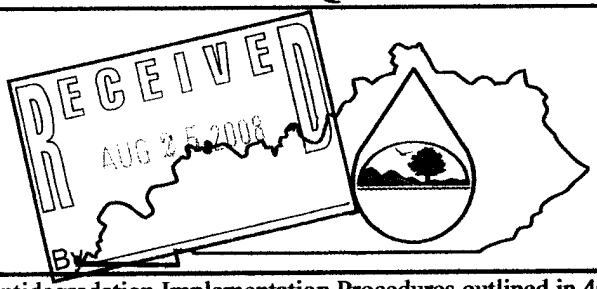
KPDES FORM HQAA



Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternative Analysis

The Antidegradation Implementation Procedures outlined in 401 KAR 5:030, Section 1(3)(b)5 allows an applicant who does not accept the effluent limitations required by subparagraphs 2 and 3 of 5:030, Section 1(2)(b) to demonstrate to the satisfaction of the Environmental and Public Protection Cabinet that no technologically or economically feasible alternatives exist and that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water is located. The approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility. This demonstration shall also include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Permit Information

Facility Name:	Evans Coal Corporation	**KPDES NO.:**	861-5340
Address:	10853 South Hwy 25E	**County:**	Knox
City, State, Zip Code:	Flat Lick, KY 40935	**Receiving Water Name:**	Unnamed Tributaries of Gregory Branch & the Cumberland River

II. Alternatives Analysis - For each alternative below, discuss what options were considered and state why these options were not considered feasible.

1. **Discharge to other treatment facilities.** Indicate which treatment works have been considered and provide the reasons why discharge to these works is not feasible.

The nearest municipal sewage treatment facility is the Barbourville Sewage Treatment Plant which is approximately 5.5 miles away. This plant was not designed for or capable of effectively treating either the type or volume of water possible with this project. Influx of water from this project would likely overload this facility resulting in a by-pass which would lead to the discharge of untreated municipal wastes creating a serious public health treat.

The water from these discharges drains into two watersheds. Routing of water to this plant would require a minimum of 47,520 feet (9 miles) of carrier line and extensive network of pump and lift stations and obtaining numerous right-of-ways and easements. Conservatively estimating line @$22/ft, a minimum of 1 lift station per mile, a central collection system, ignoring other stated requirements, the minimum cost of this operation would greatly exceed $2 million dollars.

Transporting this volume of water by self-contained disposal trucks would also be excessively expensive and impractical. Based on a 25 year, 24 hour storm event calculation, the possible peak discharge from this project could exceed 609 mgd. Rates quoted from Somerset Environmental in Somerset, KY indicated charges of $65/hour (gate to gate)/3,000 gallon pick-up of non-hazardous wastewater and a $0.49/gallon disposal fee.

2. **Use of other discharge locations.** Indicate what other discharge locations have been evaluated and the reasons why these locations are not feasible.

Discharging ponds 1 – 4 & 14 into Gregory Branch was evaluated as an alternate location but deemed unpractical. Routing the discharge would require a large central collection system, approximately 15000 feet of carrier line, a minimum of 4 lift stations per mile to accommodate the required 300+ foot lift, additional road construction, and easements. A conservative estimate for this option would exceed $1 million dollars. Producing oil and gas wells in the area also deter this consideration.

Owens Branch was considered as a discharge location for ponds 5 - 11 but would require the same constructions and costs as the above mentioned alternative and is unpractical. The cost of this option would exceed the cost of utilizing the Gregory Branch site. Additionally, due to population and increased traffic on public roads, a potential public safety risk exists.

Routing the discharge from structures 12 & 13 directly to the Cumberland River was considered as a disposal option but this would require more than 3000 feet of line, a minimum of 3 lift stations and additional leases. The disturbance caused by this option would be environmentally damaging as well as costly and is not a viable option. This option's cost would exceed $200, 000 and is not a workable choice.

Placement and design of current discharge locations were engineered to be the most effective and least invasive. Excavation, installation and involved construction for facilities required for alternate locations would create a greater environmental disturbance than the proposed discharge locations with the same end results of discharging into comparable quality water resources.

*Lift stations are site specific and vary greatly but are specific to topography and substrate composition:

***Table 1**
Pressure (LPS)

Pumping Stations (No. per mile by topography)	*Flat*	*Rolling*	*Steep*
200 gpm P.S. $54,000	0	0	2
100 gpm P.S. $43,200	0	1	2
Composite Cost	$0	$43,200	$194,400

Gravity

Pumping Stations (No. per mile by topography)	*Flat*	*Rolling*	*Steep*
200 gpm P.S. $54,000	1	0	2
100 gpm P.S. $43,200	2	1	2
Composite Cost	$140,400	$43,200	$194,400

A Mathematical Model For Estimating Sewer Costs"
by George A. Earle, III, P.E. and R. Paul Farrell Jr., P.E., Environment One Corporation

3. **Water reuse or recycle.** Provide information about opportunities for water reuse or recycle at this facility. If water reuse or recycle is not a feasible alternative at this facility, please indicate the reasons why.

The drainage area for the proposed structures is 273 acres resulting in a possible peak discharge of 422,901 gpm. In order to reuse or reycle this water, a central collection system would have to be constructed which would cost near $1 million dollars. This is economically impractical since the water cannot be used at this site.

Discharge	Drainage Area
Pond #1	40.96
Pond #2	14.99
Pond #3	39.33
Pond #4	25.86
Pond #5	28.10
Pond #6	27.14
Pond #7	33.16
Pond #8	8.62
Pond #9	15.87
Pond #10	6.37
Pond #11	8.63
Pond #12	7.24
Pond #13	8.60
Pond #14	8.24
Total	**273.11**

Using water from this project for on site dust suppression and watering of reclaimed areas was considered but because the land slope is greater than 6%, the absorption rate does not support broad land application.
There are no other facilities on site that will need a raw water source.

4. **Alternative process or treatment options.** Indicate what process or treatment options have been evaluated and provide the reasons they were not considered feasible.

As an alternative treatment option, sand filtration was evaluated but deemed not applicable. Sand filtration is used primarily as a pre-treatment to remove microbial contaminates, not particulate matter, in storm run-off in smaller, urban drainage areas. The high solids involved in a storm event could possibly clog the filtration unit rendering it ineffective. Sand filters do not control storm water flow and do not prevent downstream bank and channel erosions as proposed sediment structures are designed to do. Also, the operational effectiveness of these units in colder climates and freezing conditions are not yet know.

Using silt fences and straw bales for sediment control was considered as per BMP's but were determined to be inadequate due to the elevation, grade of the area, and drainage area size.

All mining methods were considered. Mining methods are dictated by elevation, thickness of the seam and the amount of overburden covering the reserves. Coal reserves will be recovered in the most economical, the least destructive, most logistical, and safest way. This will include employing both surface and underground mining techniques.

Constructing an on-site storm water treatment facility was considered. The volume of discharge and the lift required make this an unfeasible option. Consultation with Beckman Environmental in Cincinnati, OH, a company that specializes in these types of constructions, revealed a recent bid on a project in Columbus, OH involving a lift of 30 feet, a peak discharge of 3800 gpm (compared with 423,000 gpm for this project), a grit removal station, and influent and effluent lines at $2.5 million dollars. Cost to construct a similar facility at this site would be much greater.

5. **On-site or subsurface disposal options.** Discuss the potential for on-site or subsurface disposal. If these options are not feasible, then please indicate the reasons why.

On site disposal was considered as a disposal option. The construction of an on-site wastewater treatment type plant would require a facility engineered to handle over 400,000 gpm during a 24 hour, 25 year storm event.* Construction cost for package plants are engineered to specific location, load and other conditions but with a required collection system would be expected to exceed $1 million dollars. These plants require a continual power source, daily maintenance, periodic repair and leave a large footprint. After completion of this project, the plant would either have to be removed or abandoned to unsightly, dangerous rubbish.

**The Rational equation is the simplest method to determine peak discharge from drainage basin runoff. It is not as sophisticated as the SCS TR-55 method, but is the most common method used for sizing sewer systems.*

The installation of a sanitary septic system, i.e., septic tank was evaluated but is not an applicable option. Building a system **large enough** to handle the **volume of water** would be impractical. Septic systems are design to degrade organic waste and biodegradable material over time by anaerobic digestion. While the source water would most likely contribute some organic material and some needed bacteria, this would be inadequate to decompose the sediment and would work essentially the same as a sediment structure.

Old underground works in the area were considered as a subsurface disposal option but were deemed as potentially dangerous due to the uncertainty of the condition of the remaining structures. The possibility exists that pumping water into these works could cause a "blow-out" or leakage leading to both a public safety and environmental threat.

6. **Evaluation of any other alternatives to lowering water quality.** Describe any other alternatives that were evaluated and provide the reasons why these alternatives were not feasible.

Choosing not to mine this area as an alternate to lowering water quality was evaluated but the loss of the 20 direct jobs and the resulting $800,000 collective annual salaries, the loss of as many as 60 indirect jobs as well as loss of revenues including severance tax estimated at over $1 million dollars would have severe negative economic consequences.

Accepting the more stringent discharge limitations was considered but because this would require more aggressive chemical treatment, the real potential for an environmental or personnel accident exist. The costs are extreme and it was dismissed. Based on information from OSMRE, the cost for chemical treatment of a mildly acidic mine drainage with an average flow of 100 gpm using caustic soda was $94,784. With a possible flow of over 609 mgd during a rainfall event, the cost of this option would make the cost of this option completely prohibitive.

III. Socioeconomic Demonstration

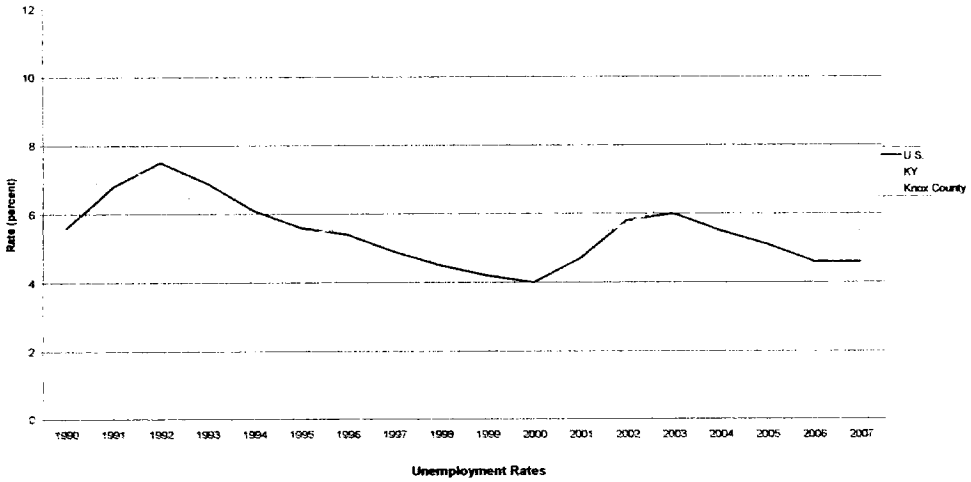
1. State the positive and beneficial effects of this facility on the existing environment or a public health problem.

Much of the watershed to be impacted by this project has already been compromised due to previous mining, logging and gas lines in the area. Using "remining" will reduce additional impact disturbance and reclamation will improve drainage, curtail erosion and improve prelaw areas. Species indigenous to the area will be planted to establish an adequate riparian zone and sedimentation will be improved. This will lead to a healthier habitat for aquatic species as well as other wildlife. Reclamation plans call for development of a fish and wildlife habitat. This will provide an area that is ecologically functional was well as aesthetically pleasing.

2. Describe this facility's effect on the employment of the area

The small community of Artemus historically has an unemployment rate significantly higher than state and national averages. This project will continue the employment of 20 people of which 95% are local residents. Economic impact studies suggest that the mining industry creates 3 indirect, directly related jobs for every actual direct mining position.* Based on this data, this project will support 80 total jobs. This project will aid in maintaining employment in an area which has very limited opportunities for economic growth.

*Source: University of Kentucky Center for Business and Economic Research: Economic Impact Analysis of Coal in Kentucky, *(1995-2004) by Haywood and Baldwin*



3. Describe how this facility will increase or avoid the decrease of area employment.

Unemployment data for June, 2008*, indicated that there were 1,039 people in Knox County currently unemployed and seeking employment. The unemployment for this county has historically been considerably higher than both the state and national average.

By maintaining 20 jobs, this facility will avoid decreasing the area's employment and will also provide indirect employment for as many as 60 others providing needed jobs for this area. This is significant for Artemus due to the fact that the community is small and jobs available in the area are limited as reflected by the unemployment statistics. This project will have a positive affect on the employment of the area. Although in a current upswing, the mining industry had experienced an almost 30% decrease in employment preceding 2005. These jobs help to decrease that trend.

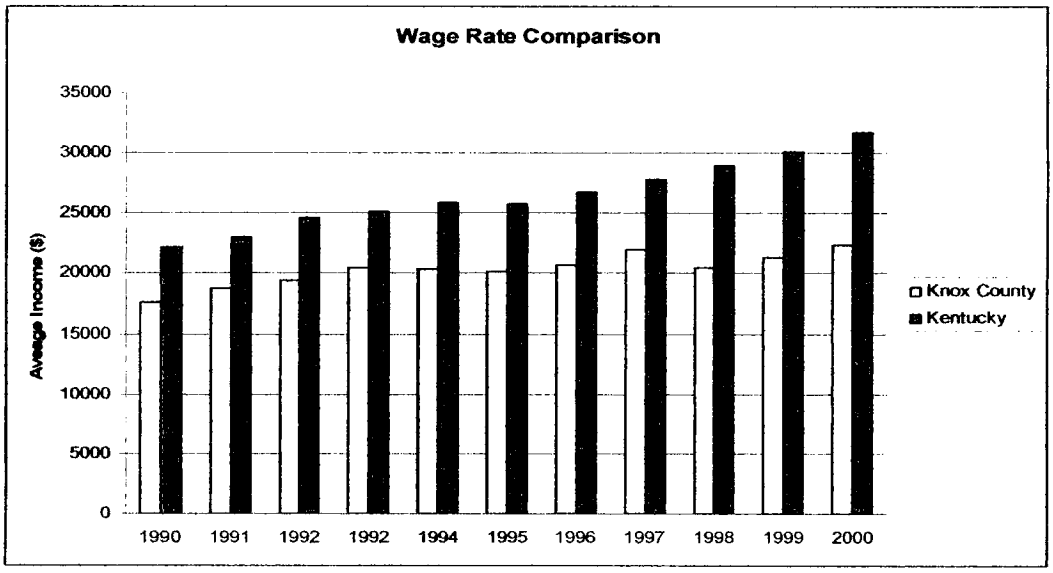
*Workforce Kentucky

4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

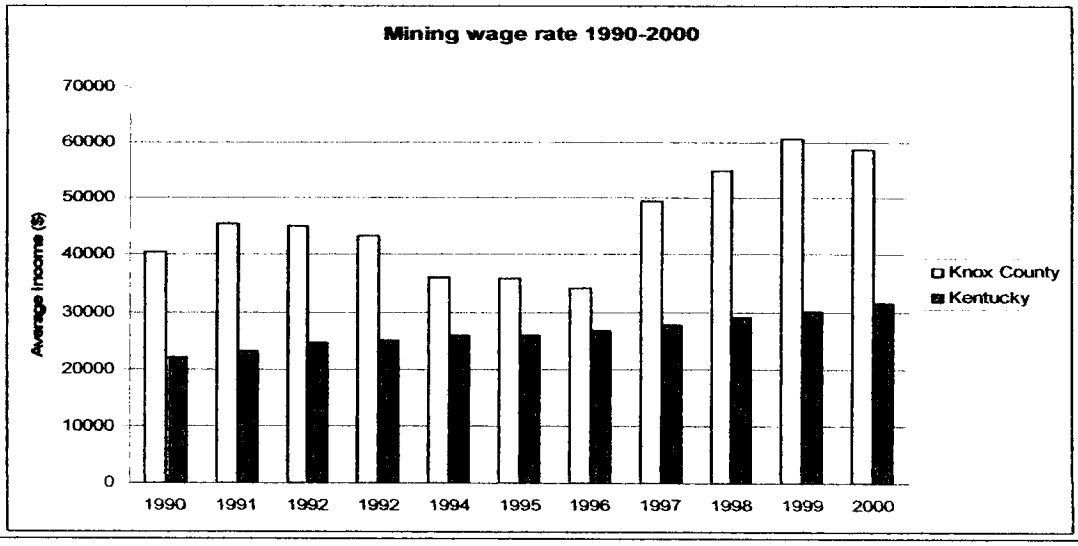
In addition to the 20 direct jobs provided by this project, it will also provide for more employment indirectly in mining service jobs. These jobs include equipment sales, mining engineering consultants, food service, fuel sales, transportation, coal washing and blending. The mining industry directly contributes to Knox County's economy through real taxes, personal property taxes and the state severance tax. The severance tax rate for coal is 4.5% of which 50% is slated to be returned to the county of origin. For the 2006-07 FY, Knox County generated $945,547 dollars in severance taxes. These taxes have been used for local education, health services, judicial services and infrastructure project. This project will contribute over $1 million dollars to the severance tax base and help provide more funding for county improvements.

5. Describe any other economic or social benefits to the community.

The jobs that this project provides will pay some of the highest wages in the Knox County. The maintenance of these jobs will have a positive significant impact on the community's economy. Comparing the average income of a Knox county resident with that of other Kentucky residents, Knox county residents earn on the average as much as $10,000 less per year:



During the same period, a Knox County coal miner earned almost $10,000 more per year that of the average Kentucky worker:



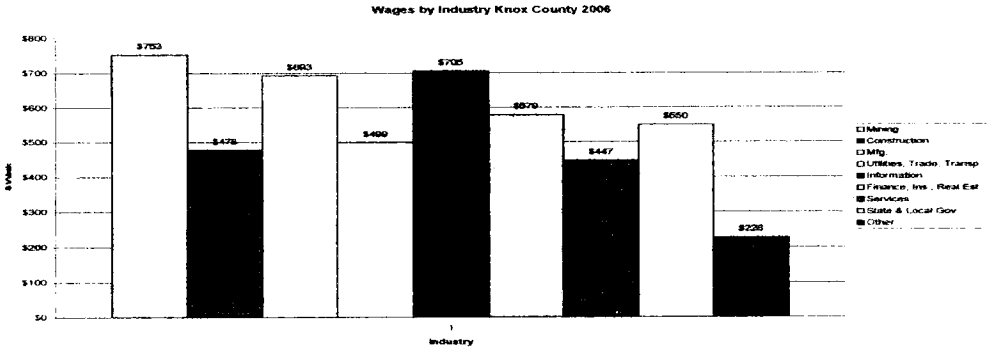
III. Socioeconomic Demonstration - continued

	Yes	No
6. Will this project be likely to change median household income in the county?		☐
7. Will this project likely change the market value of taxable property in the county?		☐
8. Will this project increase or decrease revenues in the county?		☐
9. Will any public buildings be affected by this system?	☐	

10. How many households will be *economically* or *socially* impacted by this project? **80+**

11. How will those households be *economically* or *socially* impacted? (For example, through creation of jobs, educational opportunities, or other social or economic benefits.)

The average weekly earnings for a mining employee in Knox County in 2006 was $753.36*. The income realized from the direct jobs provided by this project will near $40,000 year/household or approximately $800,000/year collectively. Currently Kentucky ranks 44th nationally in per capital income. The jobs provided by this project allow these households to earn more than most other occupations in Knox county including construction, manufacturing, utilities and real estate:



As indicated from data for the U.S. Census, in 2000, 34.9% of the people residing in Knox County were living below the poverty level compared with 14.3% for the state of Kentucky and 11.9% for the entire United States. In 2000, only 8% of Knox County residents held a bachelors or higher degree compared with 17.1% of other Kentuckians. These earnings will help these households to maintain or improve their current economic status and provide opportunities for gains in social welfare only realized from enhanced income. Severance tax dollars fund basic needs such as water and sewer projects but also fund recreational, social and cultural developments as well.

**Ky Coal Facts/Wages by County*

	Yes	No
12. Does this project replace any other methods of sewage treatment to existing facilities? (If so describe how)	☐	

This area has historically been marked by straight line residential discharges which are gradually being replaced by septic tanks. There is no treatment taking place in the project boundary.

	Yes	No
13. Does this project treat any existing sources of pollution more effectively? (If so describe how.)		☐

There is a prelaw fill and deep mine face up area lacking adequate reclamation. These two areas, totaling approximately 7 acres will be rehabilitated. Existing over growth will be removed and channelization of receiving stream due to excessive silting will be improved. Prior to the state of this project, the mine site will be cleaned and all garbage material will be disposed of. Several gas wells and access roads exist with the project area that currently lack any form of sediment control. Implementation of this project will include proper grading and drainage to improve this.

III. Socioeconomic Demonstration - continued

	Yes	No
14. Does this project eliminate any other sources of discharge or pollutants? (If so describe how.)	☒	☐

This project will involve reclaiming old mine sites which are contributing to erosion and sedimentation in the area. It will also improve sediment control from run-off resulting from existing gas wells and previous logging in the permit area. Reclamation for the area, including approximately 10 acres of existing disturbances, will include grading, initial seeding for ground control and later selected native planting to establish a functional fish and wildlife habitat.

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

This project will remove approximately 1.6 million tons of coal that would not have been recovered or made available to the market otherwise. This will result in continued employment for approximately 20 people, aid in development and maintenance of indirect jobs and will increase the amount of money the area receives in personal and severance taxes. Knox county should see the return of over $1 million dollars in severance tax dollars from this project alone. Increased and continued production of coal will help to maintain Kentucky's lowest electricity cost rankings and allows resident to use their monies to purchase other local products contributing to a healthier economy.

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

The most effective methodology as determined by standard engineering protocol will be used to recover these coal reserves. Surface re-mining maximizes recovery of resources and reduces environmental impacts. Surface extraction provides the only economical means to recover some of these coal reserves while deep mine methods must be used to recover additional reserves. Surface mining methods will allow more economical operational efficiency by allowing reclamation to be contiguous with the excavation process while the deep mine area will require less visual disturbance and environmental impact. This will expedite both recovery and reclamation.

The increase in operational efficiency will in turn increase the production levels leading to increased employment opportunities in the area, maintenance of existing employment, development and maintenance of indirect jobs and increase in the amount of monies received from coal sales. Severance tax dollars have been used for industrial site development, water and sewer line expansions, recreational facilities, senior citizens' centers, fire stations and charitable organizations. These expenditures increase the overall quality of life of the area for area residents. This project will contribute over $1 million dollars to these funds.

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title:	**BARBARA EVANS, PRESIDENT**	**Telephone No.:**	(606)546-0825
Signature:	Barbara Evans	**Date:**	8-20-08